

Art Unit: 1787

## **DETAILED ACTION**

### ***Examiner's Amendment***

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Garth Dahlen on 4/11/2011.

The application has been amended as follows:

In the abstract, delete lines 11 through 16.

In the abstract, in line 10, after "lens substrate." insert "The substrate and lens show excellent photochromic properties such as high color development density and high fading rate, and the cured product has excellent substrate properties such as hardness, heat resistance and impact resistance as well as strength (toughness) that allows for its use in rimless spectacles."

### ***Statement of Reasons for Allowance***

2. Claims 1-2, 6-8, 12, and 15-16 are allowed.

3. The following is a statement of reasons for the indication of allowable subject matter:

4. Momoda (EP 1130038) discloses a curable composition comprising (A) a polymerizable monomer, (B) a polyfunctional polymerizable monomer, and (C) a difunctional polymerizable monomer, and (D) a photochromic compound. Component (A) can be compounds identified as Applicant's component (III), component (B) can be compounds identified as Applicant's component (I), and component (C) can be compounds identified as Applicant's component (II).

5. The following table summarizes the weight percentage values (based on total weight of all monomers) for the instant application and Momoda EP '038:

Art Unit: 1787

**Table I**

	'038	<i>Claim 1</i>	<i>Claim 6</i>	<i>Claim 7</i>
(A)/(III)	1-50%	5-89%	5-89%	30-77%
(B)/(I)	1-50	1-15	1-15	3-10
(C)/(II)	25-97	10-80	10-80	20-60

6. As shown in the table, Applicant's present claims disclose more specific ranges than Momoda EP '038. In particular, the examiner notes Applicant's component (I) ranges from 1-15% at most whereas Momoda's corresponding component (B) more broadly encompasses 1-50%. There is no specific disclosure in Momoda EP '038 regarding Applicant's more narrow range, or a suggestion for one of ordinary skill in the art to select said narrow range. Further, Momoda EP '038 is silent with regard to the tensile strength.

7. Applicant filed a Declaration on 20 Feb 2009 presenting data for consideration by the examiner. The data show the tensile strength of lenses formed according to various examples disclosed in Momoda EP '038. The examiner noted only Examples 10, 11, 15, 24, 25, 34, and 35 disclose the required three monomers of the present claims. The other examples use monomers not found in the present claims. The examiner notes, however, that at least Example 10 discloses the use of "High-hardness monomer 1," specifically TMPT, which corresponds to Applicant's component (I), in amounts of 20% by weight. This is outside the presently claimed amount of 1-15% or 3-10%. Applicant's data show the tensile strength of Example 10 to be 10 kgf, well below the presently claimed 20 kgf. This provides evidence that Applicant's claimed ranges are critical to the invention.

8. Furthermore, Applicant compiled the data of the 20 Feb 2009 Declaration with the hardness data disclosed in Momoda EP '038 in the Remarks filed 2/19/2010. The data show there does not appear to be any correlation between the hardness and the tensile strength of a lens. Momoda EP '038 is only concerned with the hardness of the lens. As there is no apparent correlation between the hardness and tensile properties, one would not inadvertently create Applicant's invention through routine optimization of hardness alone.

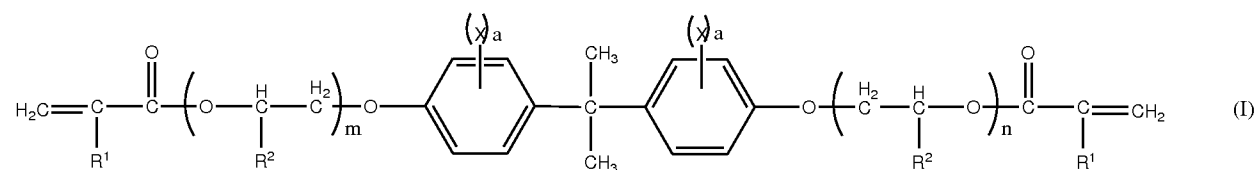
Art Unit: 1787

9. Finally, nothing in the prior art of record suggests optimizing a lens for its tensile strength properties, nor does the prior art provide guidance with respect to how to optimize for tensile strength using the three monomers presently disclosed.

10. With respect to claim 16, it is further noted: Applicant's limitation that "the polyfunctional polymerizable monomer represented by formula (1) is at least one selected from the group consisting of caprolactam modified ditrimethylolpropane tetraacrylate, caprolactam modified ditrimethylolpropane tetramethacrylate, and caprolactam modified dipentaerythritol hexaacrylate" has overcome the prior art of record.

11. Component (B) of Momoda EP '038, which corresponds to Applicants' component (I), can be any polyfunctional polymerizable monomer that exhibits an L-scale Rockwell hardness of not smaller than 60 when homopolymerized [0047]. Although Applicant indicates in the present specification that the caprolactam-modified compounds satisfy the hardness requirements, there is no disclosure in Momoda '038 of caprolactam-modified ditrimethylolpropane tetraacrylate, caprolactam-modified ditrimethylolpropane tetramethacrylate, and caprolactam-modified dipentaerythritol hexaacrylate as required in present claim 16. The "closest" such disclosure was found in Momoda US 2003/00085958, which discloses caprolactone-modified dipentaerythritol hexaacrylate has an L-scale Rockwell hardness of more than 60 [0039-40].

12. Imura (U.S. 5,556,931) discloses the following formula (I) for use in a lens substrate:



Imura also discloses how the values of integers m and n can be varied to affect the hardness of the lens substrate (col 5 ln 24-29).

Art Unit: 1787

13. Imura is silent with regard to a composition having the presently claimed monomers (I), (II), and (III) in the amounts presently disclosed. Imura is also silent with regard to the tensile strength of the lenses formed.

14. Geffcken (U.S. 3,713,869) discloses the use of an intermediate layer between a hard inorganic layer and a plastic substrate (col 2 ln 56+).

15. Geffcken is silent with regard to a composition having the presently claimed monomers (I), (II), and (III) in the amounts presently disclosed. Geffcken is also silent with regard to the tensile strength of the lenses formed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Freeman whose telephone number is (571)270-3469. The examiner can normally be reached on Monday-Friday 9:00-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571)272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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